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DIFFERENT FILTER OPTIONS WITHIN THE SUCTION LINE

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Technical task:
Present a filtering of the crude oil. Show a wide variety of types and materials in terms of feasibility for series production.

Initial situation:
Suction line function: Enables the oil pump to draw in filtered engine oil at the lowest point of the oil sump base, if possible in the middle in the longitudinal and transverse direction.
and transverse direction, if possible.

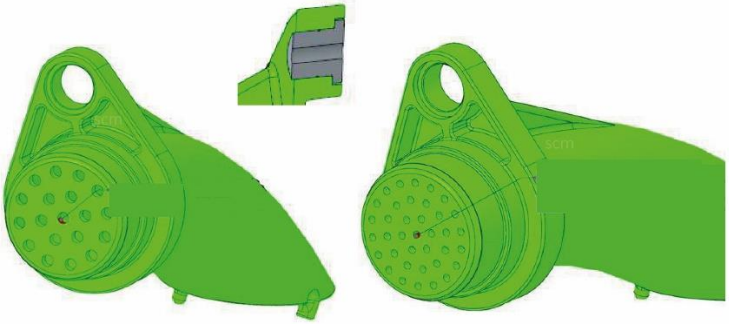
Solution:

Grid variant

- Grid (gray) clipped or welded into line.
- 2x metal bushing at the fixing points.
- Grille is prevented from swinging by crowning and cross. Case dependent.
- Grille for filtering medium and large dirt particles.

Perforated lid variant

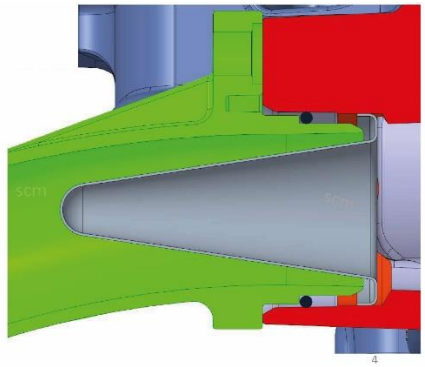
- One-piece, therefore cost-effective.
- No leak test necessary.
- Filter element is a cover included in the injection mold in the line with openings.
- Filter element for filtering medium and large dirt particles.
- With metal bushing (gray) for fastening the suction line.



Tissue cone variant
Metal mesh for filtering small to large dirt particles. No leak test necessary in each case. With metal bushing (gray) for fastening the suction line.

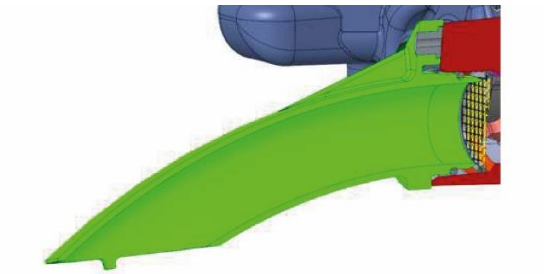
Screen inserted in the injection mold before injection.

Ex. picture fabric sieve

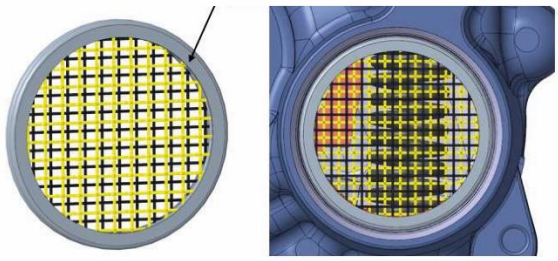


Strainer positioned between suction line (green) and oil pump (red) . Possibly jammed in the assembly of the suction line.

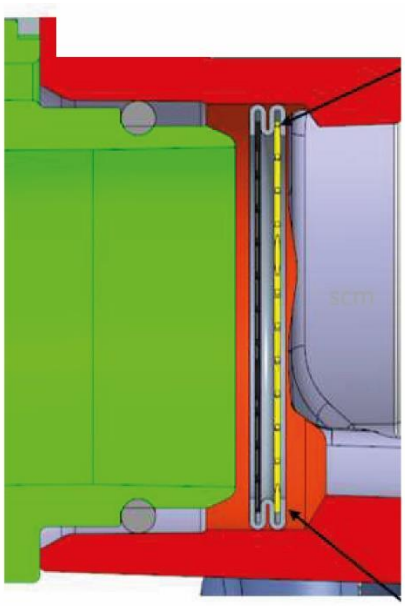
Double layer fabric filter, directional



Fabric filter for filtering medium and large dirt particles. Suction line (green) with metal bushing (gray) for attachment.

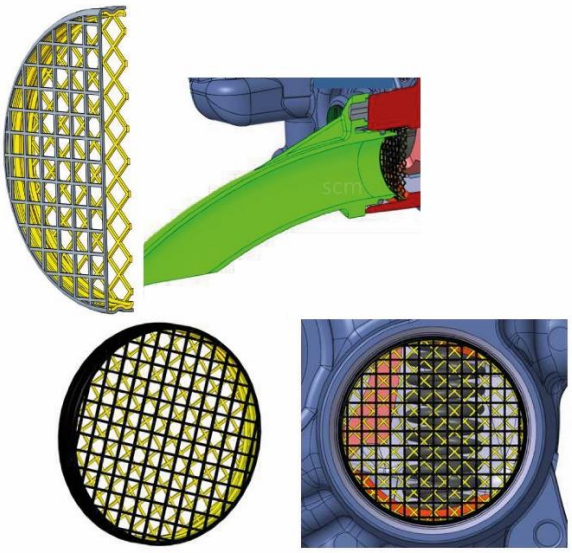


Fabric filter assembly pressed into the housing (red) before mounting the suction line (green).

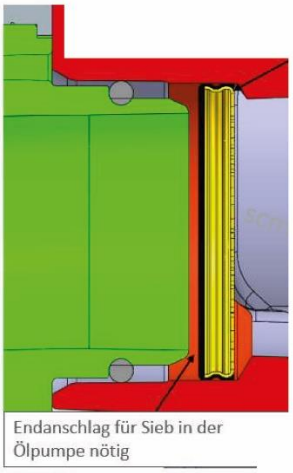


Fabric filter assembly. Fabric layers embossed in the outer ring. Diagonal offset of the second layer by half mesh width.

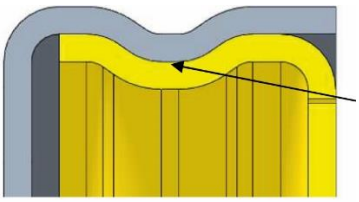
Double layer expanded metal (punched), rotated 45 degrees



Second layer rotated 45 degrees, simplifies fabric filter assembly manufacturability. Fabric filter for filtering of medium and large dirt particles. With metal bushing for attaching the suction line (gray).



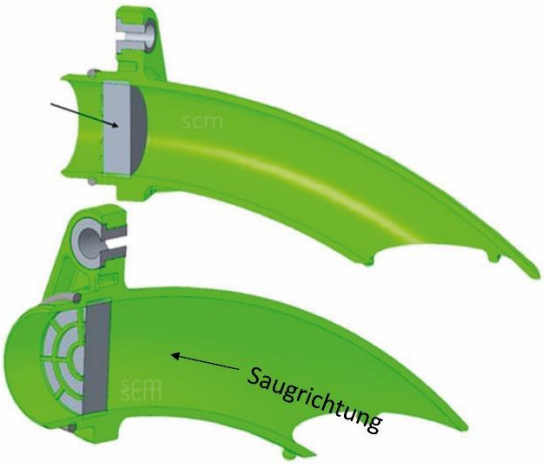
Fabric filter assembly pressed into the housing (red) before mounting the suction line (green).



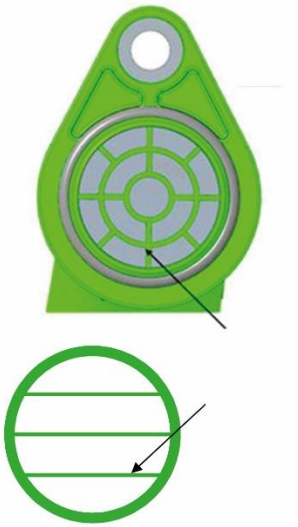
Both components stamped together.

Sponge variant

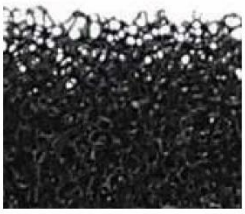
Sponge filter for filtering small to large dirt particles. Depending on the density of the sponge. With metal bushing for attaching the suction line (gray).



Sponge with protrusion inserted into the suction line (green).



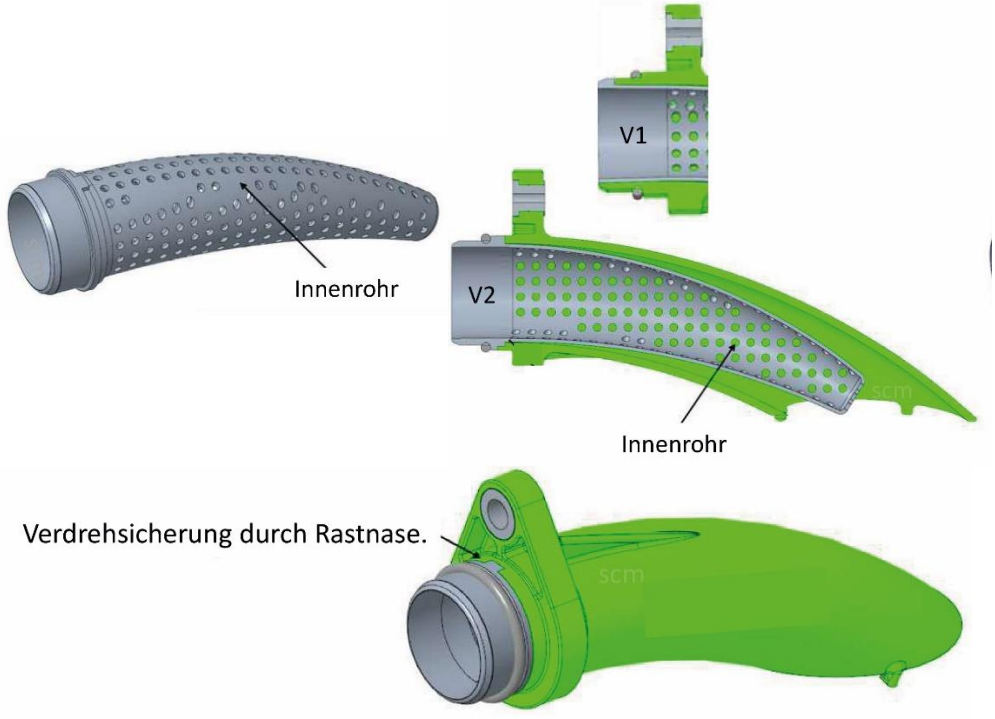
Grid or bar type to hold the sponge in position.



Sponge material in plastic or metal, depending on the requirement regarding media resistance. cost-effective solution.

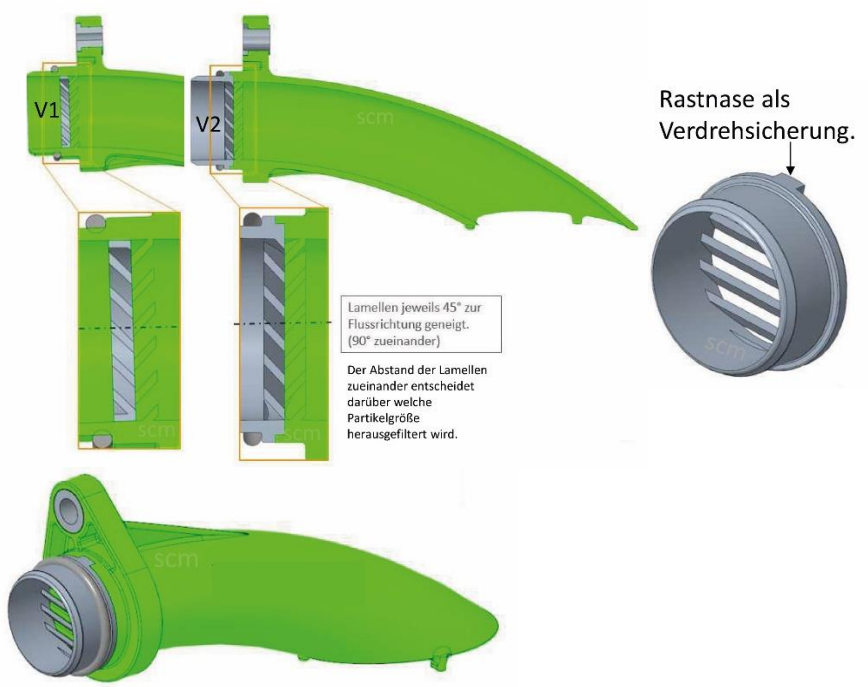
Pipe in pipe variant

No leak test necessary for V1. Inner tube for filtering medium and large dirt particles.
Cost-effective due to plastic components. O-ring seat possible in inner (gray) and outer pipe (green). With metal bushing for fastening the suction line.



Lamella variant

Cost-effective due to plastic components. With metal bushing for fastening the suction line.
V1: No leak test necessary. Component clipped to suction line to prevent loss.
V2: Leak test necessary. Component clipped to suction line to prevent loss.
Both variants require an anti-rotation device for the gray lamella position.



Advantages:
Many advantages are already added to the individual illustrations.
In general: The most diverse types of filters can be specifically assigned to the dirt to be filtered out (particle size, shape). This allows cost savings compared to the widely used metal sieve.